MAGNOLIA PLANTATION, COTTON
GINS AND PRESSES
LA Rte. 119
Natchitoches Vicinity
Natchitoches
Louisiana

HAER No. LA-11

HAER
LA
35-NATCH.V
3-

BLACK & WHITE PHOTOGRAPHS

REDUCED COPIES OF MEASURED DRAWINGS

WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HAER
LA
35-NATCH.V
3-

HISTORIC AMERICAN ENGINEERING RECORD

MAGNOLIA PLANTATION, COTTON GINS AND PRESSES

HAER No. LA-11

Location:	Magnolia Plantation, State Route 119, Natchitoches vicinity, Natchitoches Parish, Louisiana, 71421 UTM: 15.930558.3490080 Cloutierville Quad, 7.5 min series
Date of Construction:	c. 1830s - 1900s
Fabricator:	Ambrose Lecompte II and heirs
Present Owner:	National Park Service
Present Use:	Historic site
Significance:	The Magnolia plantation gin house contains one of only two known examples of an enclosed, wood-screw cotton press. The press is constructed of massive cypress timbers and is structurally integrated into the frame of the building. In addition, the gin house also contains a two-gin stand, a mechanical distributor, separator, condenser and dual-box hydraulic press, examples of some of the most significant technologies shaping southern cotton production in the late nineteenth and early twentieth centuries.
Project Information:	Documentation of the Magnolia gins and presses was carried out by Thomas Behrens and Christopher H. Marston, architects, and Richard O'Connor, historian, of the Historic American Engineering Record, National Park Service (NPS), and John Nicely, of the Institute for the History of Technology and Industrial Archaeology, West Virginia University, photographer. It was cosponsored by the Southeast System Support Office, NPS, under Stuart Johnson, program manager, and Ali Miri, historical architect, and the Cane River Creole National Historical Park, Randy Clement, Superintendent.

Introduction[1]

In his seminal work on the history of southern agriculture, Lewis Cecil Gray argued that "(t)he principal outlines of the Cotton Belt were formed in the twenty-five years from 1815 to 1840...." In large measure, the growth in cotton production was the result of demand spurred by British and New England textile industries. To "the states of the Lower South," historian John Moore contends, "this phase of the Industrial Revolution represented virtually unlimited demand for their cotton fiber during all but a few exceptional years of war or depression." As cotton prices nearly doubled following the War of 1812, settlers moved southwest in large numbers from the original plantation areas of the southeastern seaboard. In the Natchitoches, Louisiana region north of Alexandria, the availability of cheap land encouraged rapid development after 1819. Moreover, natural advantages--fertile soil and low production costs-- may have insulated the region from the economic fluctuations of the cotton markets in the 1820s, and helped it exploit the speculative boom of the 1830s.[2]

The Magnolia Plantation, on the Cane River, was among the largest cotton producers in Natchitoches Parish. Ambrose Lecomte II founded the plantation, comprising over 7800 acres, in the 1830s, and by 1859 produced over 1100 bales of cotton. Destruction during the Civil War considerably reduced acreage and cotton output: in 1869, the plantation turned out only 163 bales of cotton. In addition to the plantation house, built in 1849 and rebuilt in 1899, the site contained a gin house, an overseer's house (later adapted to use as a plantation medical facility), slave quarters later occupied by sharecroppers, a blacksmith shop still holding a forge and a variety of tools, a pigeonnier, and a store.[3]

---

[1]The following report focuses primarily on the cotton ginning and pressing equipment at Magnolia, setting it in the broadest context of nineteenth and early twentieth century cotton production. More accurate interpretation of the Magnolia experience and the nuances of northwestern Louisiana cotton culture await more detailed studies carried out using local sources.

[2]Lewis C. Gray, *History of Agriculture in the Southern United States to 1860.* 2 vols. (Washington, DC: Carnegie Institution of Washington, 1939). Vol II, p. 894; John Hebron Moore. *The Emergence of the Cotton Kingdom in the Old Southwest: Mississippi, 1770-1860.* (Baton Rouge, LA: Louisiana State University Press, 1988), p. 14. Development as far north as Shreveport was stunted by a large raft in the Red River that obstructed navigation until 1833.

[3]By the 1820s, "(g)inning began to have its own terminology. 'Gin plant' or 'gin house' referred to the building, 'gin stand,' to the machine, and 'ginning,' to both the separation of the seeds from the fibers and the entire process of turning out a finished bale." Karen Gerhardt Britton, *Bale o'Cotton* (College Station, Texas: Texas A&M University Press, 1992), p. 24; National Register Nomination, continuation sheet 1, item number 7, page 2.

From its earliest years, Magnolia likely processed its own cotton. It is not surprising that no gins remain at the site from the antebellum era since, according to John Hebron Moore, one of the most astute students of antebellum cotton culture, gins of that era "wore out rapidly, rarely lasting more than tow or three seasons," in large part because of lack of satisfactory lubricants.[4] A wood screw press that formed lint into bales still stands in the front part of the gin house. By the turn-of-the-century, the gin house contained hydraulic-powered, state-of-the-art ginning and pressing equipment used to process cotton from Magnolia and, possibly, neighboring farms. In 1939, a tornado ripped through the region, damaging the gin house and destroying the shed housing the hydraulic engine. Magnolia ceased ginning and baling operations at that time, instead sending cotton to a commercial gin for processing.

Cotton

Since early in the nineteenth century, the region has enjoyed a reputation for high-quality cotton. By the 1830s, planters throughout the south had adopted "Petit Gulf," a hybrid of Mexican seed, Siamese black seed, and Georgia green seed cottons that was impervious to rot and produced numerous large bolls of long, high quality staple. Cotton raised in Louisiana outside the Mississippi River valley was classified as "gulf cotton." Stronger than typical Atlantic varieties, gulf cotton also had a long staple, 1" to 1-1/8", a result of richer soils and a more humid climate. Particularly valuable was cotton raised along rivers, such as the Red River and the Cane River; often labeled "canebreak cotton," it was grown in the "bottoms" in the rich alluvial soils "enriched by the annual overflow of the rivers."[5]

Throughout the nineteenth and early twentieth centuries, cotton producers devoted extensive resources to field preparation, planting, cultivating and picking. Under the plantation regime and extending into Reconstruction, labor was organized in gangs. "Thus," wrote contemporary Thomas Knox, "we had 'the picking-gang,' 'the trash-gang,' 'the hoe-gang,' 'the planting-gang,' the plow-gang,' and so on through the list," including a gin-gang and press-gang.[6] Fields were plowed and raked to ready the soil for seed, which was planted in trenches created by yet another plow and then covered over. When seedlings appeared, rows were "barred off" using turning plows that created drainage ditches alongside; reversing this process, called "molding," several

---

[4]Moore, *Emergence*, p. 63.

[5]W. Hustace Hubbard. *Cotton and the Cotton Market.* (NY: D. Appleton and Company, 1928), pp. 6-8; Moore, *Emergence*, 11-14.

[6]Thomas Wallace Knox, *Campfire and Cotton Field: Southern Adventure in Time of War, Life with the Union Armies and Residence on a Louisiana Plantation.* (New York: Blelock and Co., 1865), pp. 382-3.

weeks later, gangs plowed extra soil onto the plants to give them additional room to grow and keep down unwanted vegetation. Rows were thinned during the growing season, until plants were approximately 2' - 3' apart. By the 1840s, shovel plows were used to break the soil around the plants, opening "the way for a new system of shallow culture of cotton that soon proved to be much more effective than the original relatively deep cultivation with turning plows."[7] By the 1850s, many of these processes were combined using "sweeps," which "continued in use in the lower South until the mid-twentieth century." Other improvements in plows, rakes and cultivators developed by the 1850s remained in use until after World War II. Similarly, scrapers for removing unwanted vegetation between rows, seed planting devices (some horse-drawn), and other implements appeared before the Civil War and remained in use for nearly a century.[8]

Until the 1940s, when mechanical harvesting became more widespread, picking cotton was a tedious, arduous task. Cotton bolls cluster about midway up the waist-high plant, approximately a foot from the ground. Bolls have five compartments or "locks," each containing lint to be harvested. If the cotton was at its prime and the pickers experienced, locks could be plucked intact in one motion. Pickers gathered several bolls in hand before depositing them in the long bag draping from one shoulder and resting on the ground. Bags were emptied into baskets that were weighed at the end of the day, and the picker credited accordingly. Estimates of cotton picked per field worker, whether slave or free, vary widely throughout the nineteenth and early twentieth centuries. East of Natchitoches, in Catahoula Parish, Louisiana, on the Mississippi River, in the 1850s, slaves averaged forty-five pounds per day, but in other areas could pick up to 200 pounds per day; by the 1930s, handpickers averaged from forty-five to 125 pounds per day.[9]

Seed Cotton yield also improved through the century. Although figures varied widely by location,

---

[7]Moore, *Emergence,* p. 38.

[8]T.B. Thorpe, "Cotton and Its Cultivation." *Harper's New Monthly Magazine*, VII (Feb. 1854), p. 456; Moore, *Emergence,* p. 39; William C. Holley, *Changes in Technology and Labor Requirements in Crop Production: Cotton.* (Washington: Works Progress Administration, 1937), pasim.

[9]The lower 1850s figure is quoted in Moore, *Emergence,* p. 9, citing *DeBow's Review,* XII (1852), 632-3, and the higher figure of that decade is from Moore, *Emergence,* p. 12; the lower 1930s data is from Roman L. Horne and Eugene George McKibben, *Changes in Farm Power and Equipment: Mechanical Cotton Picker.* Washington: Works Progress Administration, n.d. (C. 1937), p. 5, while the higher data from that decade is from Holley, *Changes,* p. 51. Britton, *Bale,* p. 81. According to Hubbard, *Cotton,* p. 60, just prior to World War I, pickers earned approximately $1 to $1.25 per hundred weight.

according to Thorpe, a contemporary observer, a "'great yield' is one thousand pounds of 'seed cotton' to the acre, which makes two thirds of a bale of ginned cotton of four hundred and fifty pounds." The average was believed to be one bale per two acres of seed cotton.[10]

Gin House

Gin houses varied in size from one site to the next. Generally, they increased in size as power sources changed from draft animal to steam. Where horses or mules powered cotton equipment, structures were small and simple. Those with steam engines were substantially larger, their stacks dominating the local skyline. The steam engine would power not only the gins and press, but also grist and saw mills and other woodworking machinery housed either with the gin or in nearby structures, connected to the engine by means of shafts and belts.[11]

The Magnolia gin house is of great interest and requires further analysis to resolve its date of construction. An 1850s map depicts a gin house at approximately the same location.[12] However, the present building's size and construction quality suggest a date substantially later.[13] It is a large agricultural structure, and appears to have been constructed at one time, rather than added to over a period of years or decades. Uniform uprights and floor joists support floors, walls, and roof beams (although current roof beams are new). Joints throughout are mortise-and-tenon. Sidewall sills consist of three segments, two long beams joined with one short beam: joining configurations differ side-to-side, but footers, sills and uprights are consistent throughout with same-date construction.

The integrated large wood-screw press was likely retrofitted to the structure and is of little help in assessing the building's date of construction. In short, the age of the wood screw press appears to be inconsistent with the age of the building. The press (discussed in more detail below) is cited

---

[10]Thorpe, "Cotton," p. 175.

[11]Moore, *Emergence,* pp. 71-2; Britton, *Bale,* p. 18, 24-5,

[12]Furnished by Dr. Ann Malone.

[13]As late as 1880, the U.S. Census described the ordinary gin house as "a common two-story, gable-roofed frame building, of very rough construction." Clearly, the gin house at Magnolia is vastly superior in materials and construction techniques to the typical facility described in the 1880 Census. Edward Atkinson, "Report on the Cotton Manufactures of the United States." U.S. Department of the Interior, Census Office, *Report of the Manufactures of the United States at the Tenth Census* (1880), (Washington, DC: GPO, 1883), p. 944

in the National Register nomination as "ca. 1830... incorporated into the house structure."[14] George Lowry, a mechanical engineer writing in 1898, suggests this type of press was prevalent from 1810 until the introduction of power screw presses between 1840 and 1860, and the steam or hydraulic press in 1870,[15] but Samuel A. Goodman, Jr. purchased a nearly-identical press for his Tyler, Texas farm in 1875.[16] From its joinery and hardware, the press appears to be from the antebellum era; if so, then it was likely built into the building when the structure was erected, probably sometime in the late nineteenth century. Resolution of these issues awaits further research into the building's components, particularly analysis of metal hardware, footer brick-and-mortar, and examination of the large cistern at the rear of the building.

The building's other modifications read more clearly. The first-level floor in the wood screw-press area was a later addition, possibly upgrading a dirt floor for hay storage, while joists exist for the second-level floor in this area. The area in front of the two-gin stand on the second level is not so clear: On the one hand, gin position suggests the presence of flooring, as do floor-joist notchings; on the other, existing floor joists are also notched in a way that is consistent with the presence of a press in this section of the structure. The floor in front of the hydraulic press reveals the location of the ramp transporting baled cotton from the second to the first level, although there are remnants of other uses in this area that are not easily explained. A seed storage area likely existed somewhere in the vicinity of the building's center, as did a lint room.

There is much we do not know, and cannot determine from available artifacts, about the setup and operation of the cotton gins and presses at Magnolia. In addition to questions of power (see below), the internal configuration of the gin house prior to the installation of present ginning and pressing equipment is unclear, especially the location of the gin or gins, lint room, and raw seed-cotton and seed storage areas.

Power

Unfortunately, little remains of the sources of power for equipment at the Magnolia gin house. This is particularly true of power sources predating extant ginning equipment. Steam was first used to power gins on a plantation in Mississippi in 1830, and by the 1850s steam-powered gins were more widely distributed; Britton dates the general shift to steam to the post-1870 era. Certainly, a plantation the size of Magnolia could easily have made use of such a power source. Steam engines were generally housed in separate buildings or, as in the case of the engine at

---

[14]National Register Nomination, continuation sheet 1, item number 7, page 2.

[15]George A. Lowry, "Ginning and Baling Cotton, from 1798 to 1898," *Transactions,* American Society of Mechanical Engineers, Vol. XIX (June, 1898), p. 819.

[16]Britton, *Bale,* p. 48.

Magnolia, in a shed behind the gin house. The existence and location of a steam press pre-dating the existing dual-box press are matters of conjecture at this time. According to George Lowry, a mechanical engineer writing in 1898, steam did not come into use for presses until the 1870s.[17]

The type and size of the steam engine once mounted on the footers at the rear of the house is also unknown, as are its date of installation and any previous power source.[18] The separator, distributor, gins and condenser were likely driven directly by the steam engine, with power transmitted via a system of shafts and belts. It is probable that the steam engine in turn powered a hydraulic pump to run the press. The extant drive system consists of a main shaft, patented in 1885, six wood belt wheels manufactured by the Reeves Pulley Company of Columbus, Indiana, and two metal wheels. Several other wood wheels are distributed around the barn. Representative contemporary horizontal steam engines used in this capacity developed "steam working pressures of 85 to 100 p.s.i. (pounds per square inch), with pumping capacities ranging from 9 to 15 gallons per minute up to 3,200 pounds hydraulic pressure per square inch" delivered to the press.[19]

Likewise, the source of power for the wood screw-press and earlier gins is indeterminate. A similar press at the Goodman ranch at Tyler, Texas, now at Texas Tech at Lubbock, Texas, was mule-powered.[20] Other contemporary presses utilized draft animals, and it is likely, given the relative technological sophistication of the remaining screw press, that the same was true of Magnolia. Unlike surviving contemporary presses, however, the Magnolia press has no prominent "buzzard wings" to which draft animals would have been attached. Although possible, it would have been an extreme anomaly for the press to have been powered by humans. It is noteworthy that the press is in near perfect balance with a low-friction metal pivot point, thereby necessitating a minimum of power to rotate it and draw down the platen. Wear marks on the rotating slanted legs suggest that rope may have been wrapped around the inclined support members, possibly to attach a cross brace for the draft animal. Although no physical evidence has been uncovered to suggest it, motive power from a mule or horse walk around the press could have been transferred, by means of belts and pulleys, to other parts of the barn and used to power early gins. This is, at best, conjecture.

---

[17] Lowry, "Ginning," p. 819; Moore, *Emergence,* pp. 58, 71; Britton, *Bale,* p. 51.

[18] According to Ambrose Hertzog, in an interview with the author 17 September 1996, the building housing a steam engine was destroyed in 1939, and the engine was then sold.

[19] Charles Abel Bennett, "Standard Density Cotton Gin Presses," U.S. Department of Agriculture, *Circular No. 733*, August, 1945, p. 13.

[20] Britton, *Bale*, p. 48.

Cotton ginning

"Cotton ginning includes the cleaning and other preliminary processes involved in preparing seed cotton, as well as the separating of the fibers from the seed. When harvested, cotton usually contains dirt, hulls, leaf fragments, and other material which must be removed if the ginned lint is to have the highest market value."[21] In short, the ginning process involves not just a single machine, but a sequence of devices designed to separate lint from sticks, trash, hulls and seeds. Separation of trash and other plant materials from the cotton boll is accomplished as the cotton is transported from wagon to gin to condenser. Seeds are removed by the saw gin, a variation of the invention first patented by Eli Whitney in 1794.[22]

Ginning capacity improved throughout the nineteenth century. Gin size was generally rated by the number of saws, although increases in their diameter and speed to some extent also increased capacity. In 1830, a Mississippi plantation, sixty-saw gin cleaned seed cotton enough to make approximately four bales; just over two decades later, a fifty-five saw gin produced by Daniel Pratt yielded five bales in just 12-1/2 hours. More efficient pressing technologies likely would amplify the superiority of the later gins, whose bale-output was measured at nearly 500 pounds per bale. By the Civil War, eighty-saw gins had become common on the largest plantations, with output rated at about ten bales per gin per day.[23]

Texan Robert Munger designed a series of pneumatic and mechanical processes that "completely reorganized the hundred-year-old tradition of plantation ginning."[24] He sought remedies for the frequency and magnitude of gin house fires, the speed with which they spread, the amount of trash still contained in seed cotton as it entered the gin, the impurities cast into the gin-house air, and the labor and time resulting from delays and congestion in moving seed cotton from delivery wagon to gin.[25] The effects of these improvements were not lost on contemporaries. Engineer

---

[21]Charles Abel Bennett, "Ginning Cotton." United States Department of Agriculture, *Farmers' Bulletin* No. 1748 (August 1935), p. 1.

[22]The historical evidence is persuasive that Whitney did not invent the cotton gin but, rather, secured his patent upon the expiration of Hodgen Homes' *Caveat of Invention* granted by the War Office in 1789. Bennett, *Saw*, p. 17.

[23]Moore, *Emergence*, pp. 57-61; Thorpe, "Cotton," p. 175.

[24]Britton, *Bale*, pp. 58-9.

[25]Atkinson reported that "The Cotton is brought from the field in wagons and unloaded into the upper story by being carried up an outside ladder in baskets. It is then piled up on the floor until fed to the gin, which is done by hand." Atkinson, "Cotton," p. 4.

George Lowry noted that "in the year 1791 two operators could produce two pounds of cleaned cotton per day. With the present system of automatic feeders, etc., only two men are required to remove the cotton from the wagon and attend to six gins producing twenty-four thousand pounds of cleaned cotton daily."[26] As late as 1939, over fifty years since Munger had first patented his devices, scientists and engineers at the USDA considered "(t)he pneumatic delivery of seed cotton to a gin system with mechanical distribution devised by Munger...one of the great developments in cotton ginning."[27] By stabilizing the supply of cotton to the gins, Munger's innovations transformed ginning from a set of discrete steps to a continuous process.

Most components of Munger's system are present at Magnolia, although the cotton suction apparatus is almost completely disassembled. The pneumatic elevator includes the fan currently outside the first level, various flue ducts, some of which appear to be lying about the gin house, and the vacuum box (also known as a separator) at present detached and lying under the condenser but originally attached to the distributor above the gin stand. The mechanical cotton distributor, still in place above the gin-stands, was designed and patented by Munger and manufactured by Continental Gin Company of Prattville, Alabama.[28]

In operation, the fan was attached to the vacuum box mounted directly on the distributor over the gin-stand. As historian Karen Gerhardt Britton describes the process, "(w)hen the fan was turned on, cotton was drawn from the wagon into and through the separator, and was dropped through the pipe into the wooden conduit," or distributor.[29] The separator sucked cotton into a chamber, where a beater forced it against a wire screen. Heavy foreign objects, such as nails and stones, were removed through a door, lighter substances like sand through exhaust chambers, and dust and leaf "trash" through a chimney. The distributor, a two-tiered trough, housed a belt studded with rows of spikes. At intervals determined by the number of gins being fed, rubber flaps supported by the spikes formed an air-tight seal against the sides and top of the distributor trough at the separator. The bottom tier of the distributor opened onto the gin feeders, maintaining a steady supply of seed cotton to each. Surplus cotton was dropped for later ginning.[30]

---

[26]Lowry, "Ginning," p. 812.

[27]Francis L. Gerdes, et al. "Effect of Cleaning Seed Cotton on Lint Quality and Ginning Efficiency." U.S. Department of Agriculture, *Bulletin* No. 663 (January, 1939), p. 2.

[28]Robert S. Munger, U.S. Patent No. 308,790 (Dec. 2, 1884).

[29]Britton, *Bale*, p. 59.

[30]Robert S. Munger, U.S. Patents No. 308,790 (Dec. 2, 1884), and No. 478,883 (July 12, 1892); U.S. Department of Agriculture, *Cotton Ginners'* Handbook (USDA, Agricultural Research Service), Agricultural Handbook No. 503 (Dec., 1994), pp. 1-3.

Munger's innovations were part of "a broad field of mechanical developments in accessories and auxiliaries to the cotton gin proper" that had the net effect of transforming and expanding the functions and configuration of the gin.[31] Designed to remove hulls and leaf "trash" while feeding seed cotton to saws, these "cleaner feeder" improvements include the huller patented by David G. Olmstead in 1859, the "independent huller-extractor" patented by Daniel T. Ethridge in 1878, and "the double-rib huller gin" patented by Washington L. Ellis in 1889.[32] According to Department of Agriculture engineers, these innovations still constituted, as late as 1939, "the bases for the present huller gin and unit extractor for the removal from seed cotton of burs, sticks, stems, and leaf."[33] Machinery at Magnolia lacks innovations developed during the early twentieth century designed specifically for conditions peculiar to the new cotton areas of west Texas. There, "labor shortages and weather conditions ...contribute(d) greatly to the harvesting of bolly (cotton whose growth was stopped by frost before bolls fully mature) and snapped (hand gathered cotton where entire boll was snapped off plant) cottons."[34]

The huller gins at Magnolia bear the patent date of Washington Ellis' saw-gin patent, August 27, 1889, and contain huller ribs consistent with Ellis' patent. Feeder-cleaners are two wire-studded fluted wood cylinders (approximately 67-1/4" long, the largest with eleven rows of wires set 1-1/2" apart in three-row sets, and the second and third rows off-set 1/2" from the previous row), and a heavy gauge screen. According to USDA engineers, "cotton passes through fluted rollers, over a rapidly revolving picker roller which is studded with spikes, thus beating the cotton vigorously and dragging it across a heavy wire screen." The greater portion of the dirt and dust drops through this screen and is carried out by a screw conveyor."[35] Ellis listed his address as Prattville, Alabama, and assigned one-half interest in his patent to Merrill and Daniel Pratt, suggesting he worked for the Pratts and that the gins were built by the Pratt Gin Company.[36]

---

[31]Gerdes et al., "Effect of Cleaning Seed Cotton...", p. 2.

[32]Gerdes et al., "Effect of Cleaning Seed Cotton...", pp. 1-2; David G. Olmstead, "Cotton Gin." U.S. Patent No. 26,516 (Dec. 20, 1859); Daniel T. Ethridge, "Cotton-Gin." U.S. Patent No. 206,097 (July 16, 1878); Washington L. Ellis, "Saw Gin." U.S. Patent No. 410,082 (Aug. 27, 1889).

[33]Gerdes et al., "Effect of Cleaning Seed Cotton...", p. 1.

[34]Gerdes et al., "Effect of Cleaning Seed Cotton...", p. 2.

[35]Fred Taylor, et al. "Cotton Ginning Information for the Farmers." USDA *Farmers' Bulletin* No. 764 (Oct. 31, 1916), p. 10.

[36]Washington L. Ellis, "Saw Gin." U.S. Patent No. 410,082 (Aug. 27, 1889).

Operations to separate lint from seed evolved throughout the nineteenth century, and Magnolia gins incorporate those improvements that would be expected in state-of-the-art late nineteenth century gins. Gins have 70 saws 10" in diameter set 3/4" apart with moderate roach-back teeth, ribs approximately 1/16" apart, standard mote board, eleven-row cylinder brushes with 120 brushes/row, and an open-box seed augur. From the cleaner-feeder, seed cotton was fed to the saws which separated lint from seed. Seeds fell into the seed augur running at the base of the gin and was carried to a seed room or bagging station. Saws pulled lint through ribs and the cylinder brush doffed it from saw teeth, creating a draft sufficient to send lint to the condenser. According to Munger's early patent, the flue running from gins to condenser needed to be of sufficient length to allow lint fibers to straighten and additional remaining dirt and dust to drop out. The condenser separated lint from air by means of a revolving screen and dropped densely lapped lint into the press box for pressing and baling.[37]

Pressing and Baling

Once ginned, cotton was baled for transport to market. Early in the nineteenth century, before LeComte purchased the Magnolia, the most aggressive cotton producers on the Mississippi sought to exploit the tendency of shippers to assess shipping charges by volume rather than weight by packing their cotton as densely as possible. The use of screw presses dramatically increased bale weight. In 1790, the average U.S. bale weighed approximately 200 pounds. This figure steadily increased, reaching approximately 300 pounds in 1830, and 500 pounds for "Alabama, Louisiana and Mississippi" cotton in 1855. Nonetheless, as Joseph Addison Turner, a mid-nineteenth century student of the cotton industry observed, though "the commercial standard of quantity in the cotton trade is generally the bale...the weight of the bale is by no means uniform."[38]

---

[37]Robert S. Munger, "Mechanism for Handling Lint Cotton," U.S. Patent No. 308,787 (Dec. 2, 1884; Bennett and Gerdes, "Ginning Cotton." p. 36, 38; Charles A. Bennett, *Saw and Toothed Cotton Ginning Developments* (Dallas, TX: the *Cotton Ginners' Journal* and the *Cotton Gin and Oil Mill Press*, 1962), pp. 39-55.

[38]Moore, *Emergence*, p. 11; Joseph Addison Turner, *The Cotton Planter's Manual; Being A Compilation of Facts from the Best Authorities on the Culture of Cotton, Its Natural History, Chemical Analysis, Trade and Consumption, and Embracing a History of Cotton and the Cotton Gin.* (NY: C.M. Saxton and Company, 1857), pp. 273-6,

Wood Screw Press

Several sources suggest that the wood screw press was constructed on-site in the mid-1830s.[39] If this is true, the wood press at Magnolia was, indeed, state of the art equipment in the universe of early nineteenth century cotton plantations.[40] Most other extant presses, and pictorial evidence of contemporary presses, are of the "buzzard wing" design, in which

> the box is made of rough, unplaned boards, the screw is of wood, rudely chiseled out, and the whole construction is of the rudest and most primitive kind. The power is applied by means of long levers, which extend on either side. To these levers mules are hitched... The press usually stands fifty feet from the lint-room of the gin-house, and all the lint has to be carried to the press at this distance, through mud and dirt, and in all weathers.....Such is a fair account of the buildings and machinery for preparing cotton for the factory, formerly used throughout the South, and still the kind most frequently met with.[41]

Thus, the Magnolia wood screw press differs from most of its contemporaries in its overall design, the quality of its construction, the quality of the construction of the surrounding structure, and in the respective locations of the cotton ginning and pressing areas. It closely resembles the Goodman press, made in the vicinity of Tyler, Texas around 1875.[42]

The press consists of three main parts: frame, yoke and screw assembly, and box and pivot assembly. The press frame utilizes the structure's frame, with massive wall studs and second story joists supporting the press' frame uprights and stabilizing diagonals. The massive screw is secured to the yoke, a fish-belly shaped timber, by mortise and tenon joint, and is attached on the other end to the platen. The yoke and screw assembly rides in slots cut into the inside walls of the frame uprights. The box and pivot assembly has five main parts: uprights inclined slightly inward;

---

[39]Conversation with Dr. Ann Malone, Sept. 18, 1996. Dr. Malone's research suggests that Ambrose LeComte II, who purchased the plantation in the 1830s, was a forward looking businessman who likely would have adopted technology such as the wood screw press. See also National Register Nomination, Magnolia Plantation, continuation sheet 1, item number 7, page 2.

[40]See, for example, HAER No. NC-1, "Flowers' Farm Cotton Press, c. 1850," Anson County, North Carolina; HAER No. SC-11, "Cotton Press," Dillion County, South Carolina.

[41]Edward Atkinson, "Cotton," p. 945.

[42]Britton, *Bale*, pp. 48-9.

cross arm with threaded hole for the screw; upper box; lower box, including gates, movable end rails and base; and the iron pivot and pivot-base upon which the box assembly rotated.

Burlap or some other rough cloth was set on the bottom of the box, the gates closed, and cotton fed into the upper box at the second floor level . (It is not known to what level the box was filled with cotton lint to yield bales of approximately 400 - 500 pounds.) To press the cotton, the entire press assembly was rotated clockwise. The screw did not turn because it was locked into place by the mortise and tenon joint at the yoke; rather, the entire yoke, screw and platen assembly was drawn down the frame by the action of the threads in the cross arm at the top of the box and pivot assembly. Once the cotton was pressed to the level of the lower box, twine or wire was then wrapped around the bale and secured, and the bale pried out of the press before the press was turned counter-clockwise, raising the platen and plunger again.

The Dual-box hydraulic press

The two-story, dual-box hydraulic press compress cleaned lint into bales of approximately 500 pounds. As late as 1916, the hydraulic press was considered to be "very quick," but was also thought "the most expensive kind (of press) to operate, and requires a larger investment."[43]

As in the case of the seed cotton elevator and distributor, Robert Munger was key in the development of cotton pressing technology. Until the 1880s, the typical press had a single box, with the first hydraulic-powered press appearing in the 1870s. Munger expanded from one press box to two pivoting on a central axis; added a tramper to press the lint into the box; and developed "dogs" to restrain the lint under tension until the press was rotated and the cotton pressed and baled. The press at Magnolia is a Munger design manufactured by the Continental Gin Company, probably c. 1900.[44]

Four brick columns support the press from below. Directly atop the columns a system of large wood beams supports, guides and anchors the vertical axle. A large hydraulic cylinder containing an upward-charging ram is framed within the brick columns, resting on wood beams within a valve pit. Two boxes that receive tramped lint and hold it for pressing rotate opposite each other on the axle just below the second level turntable floor. A counterweight system for returning the ram to the cylinder operates adjacent to the cylinder. Upper level boxes are equipped with "dogs"

---

[43]Taylor et al. "Cotton Ginning," p. 16.

[44]Robert S. Munger, "Cotton Press." U.S. Patent No. 308,789 (Dec. 2, 1884); "Cotton Press." U.S. Patent 394,125 (Dec. 4, 1888); Charles A. Bennett, *Cotton Ginning Systems in the United States and Auxiliary Developments.* (Dallas, Texas: the *Cotton Ginners' Journal* and the *Cotton Gin and Oil Mill Press*, 1962), pp. 4-11; Britton, *Bale,* p. 73; Lowry, "Ginning," pp. 818-21.

to lock pressed lint in place prior to baling, pivoting front and back doors, and locks. A cylinder with ram for lint tramping rests on supports above the boxes, and a counterweight system for returning the ram to the cylinder operates adjacent to the far side of the press.

In operation, burlap or cloth was laid on bottom of press box. On the upper level, densely lapped lint left the condenser and filled the press box. At intervals, an operator released a valve triggering the tramper, which pushed the cotton into the box, where it was locked under tension by the dogs. Counterweights were released and the tramper returned to the cylinder. Press boxes were then rotated 180 degrees, and the condenser began filling the second box with cleaned lint. Simultaneously, the lower-level cylinder rammed the tramped cotton to the second level, where it was banded and removed.

The appropriate material to bind the bale was a constant debate. Until the turn of the century, cotton producers generally relied on the time-honored material: rope. But that is not to say that they had not tried other methods. Indeed, both wood and metal had proven unsatisfactory, as had various buckle systems, and conservative planters remained loyal to rope.[45]

Labor in the gin house was among the most difficult work involved in producing cotton for market. As Thomas Knox observed, "(t)he process of ginning cotton is pretty to look upon, though not agreeable to engage in." In the antebellum era, up to ten slaves worked the equipment on large plantations: four transporting cotton to and from the gins and collecting seed, two maintaining draft teams driving the gins, and four working the press and its draft teams. "This apartment is technically known as the 'lint-room," Knox continued.

> The air is full of the flying lint, and forcibly remins a Northerner of a New England snow-storm. The lint falls, like the snow-flakes, with most wonderful lightness, but, unlike the snow-flakes, it dows not melt. When the cotton is picked late in the season, there is usually a dense cloud of dust in the lint-room, which settles in and among the fiber. The person who watches the lint-room has a position far from enviable. His lungs become filled with dust, and, very often, the fine, floating fiber is drawn into his nostrils. Two persons are generally permitted to divide this labor. There were none of the men on our plantation who craved it.

By the 1920s, mechanization had considerably thinned gin crews, and pneumatic cotton conveyance had cleaned the air considerably. In Burton, Texas, a crew now consisted of a manager, two ginners, a pressman, and an engineer.[46]

---

[45]Moore, *Emergence*, p. 66; Britton, *Bale*, p. 43.

[46]Britton, *Bale*, p. 27, 88; quote from King, *Campfire*, p. 377.

Conclusion

The Magnolia Plantation gin house contains cotton ginning and pressing equipment representing all aspects of cotton processing, from seed cotton handling to lint baling, from the 1880s through 1939. The fan and conduit system, both partially destroyed, suggest the means by which seed cotton was moved from wagons and trucks to the gins on the second floor, although reconstruction of the roof may have obliterated the precise location and configuration of this apparatus. A standard conveyor distributed seed cotton to the two-gin stand, vintage 1890s, and a second flue system carried cotton to the condenser and then to the dual-box hydraulic powered press.

For a longer period, various components represent discrete aspects of the process, albeit unevenly. Extant press and baling equipment--a wood screw press of undetermined date and a dual-box hydraulic press from the turn of the century--represent several generations of pressing and baling technologies. Note, however, that notchings in second-floor joists and reused beams on the first floor proximate to the hydraulic press suggest the presence of another press, possibly a metal variant of the wood screw press. Ginning technology is less chronologically representative. A gin in an extreme state of disassembly lies about the first floor, but its components--huller, and saw and brush cylinders, in particular--suggest it is at least a close contemporary with the extant two-gin stand on the second floor. Thus, there is no ginning equivalent to the wood-screw press, while remaining ginning equipment is consistent with the extant seed-cotton distribution and hydraulic pressing and baling technologies.

The Magnolia gin house and equipment possess a high degree of integrity. Considered in context with extant structures on the plantation, they are potentially a powerful tool with which to interpret the American South's quintessential industry--the production of raw cotton--and, perforce, significant themes in the development of a regional economy, labor force, and culture that speak equally as authoritatively to national themes.

Bibliography

Catalogs

Continental Gin Company. *Continental Cotton Ginning Machinery.* Birmingham, AL: Continental Gin Company, 1910.

Continental Gin Company. *Continental Cotton Ginning Machinery.* Catalog 165-A. Birmingham, AL: Continental Gin Company, n.d.

Continental Gin Company. *Cotton Gins and Feeders.* Bulletin 116. N.p., n.d.

Southern Cotton Gin Company. *Illustrated Catalog of Cotton Gins.* Bridgewater, MA: n.p, n.d. (Listed at Smithsonian Museum of American History as "Pre-1900).

Books

Bennett, Charles A. *Cotton Ginning Systems in the United States and Auxiliary Developments.* Dallas, Texas: The Cotton Ginners' Journal and The Cotton Gin and Oil Mill Press, 1962.

Bennett, Charles A. *Saw and Toothed Cotton Ginning Developments.* Dallas, Texas: The Cotton Ginners' Journal and The Cotton Gin and Oil Mill Press, 1962.

Britton, Karen Gerhardt. *Bale o'Cotton: The Mechanical Art of Cotton Ginning.* College Station, Texas: Texas A&M University Press, 1992.

Bruchey, Stuart, (Ed.) *Cotton and the Growth of the American Economy: 1790-1860.* NY: Harcourt, Brace & World, 1961.

Christy, David. *Cotton is King: or the Culture of Cotton, and its Relation to Agriculture, Manufactures and Commerce; to the Free Colored People; and to Those Who Hold that Slavery is in Itself Sinful.* Cincinnatti, OH: Moore, Wilsach, Keys & Co., 1855

Hamby, Dame (Ed.) *The American Cotton Handbook.* Vol 1. New York: Interscience Publishers, 1965.

Holley, William C. and Arnold, Lloyd E. *Changes in Technology and Labor Requirements in Crop Production: Cotton.* Washington, DC: Works Progress Administration, 1937.

Horne, Roman L. and McKibben, Eugene George. *Changes in Farm Power and Equipment:*

Mechanical Cotton Picker. Washington: Works Progress Administration, n.d. (C. 1937).

Hubbard, W. Hustace. *Cotton and the Cotton Market.* NY: D. Appleton and Company, 1928.

Knox, Thomas Wallace. *Campfire and Cotton Field: Southern Adventure in Time of War, Life with the Union Armies and Residence on a Louisiana Plantation.* NY: Blelock and Company, 1865.

McMillan, Dr. M.C. "Daniel Pratt Ante-Bellum Southern Industrialist." Auburn University Archives, Auburn, Alabama. N.d.

Moore, John Hebron. *The Emergence of the Cotton Kingdom in the Old Southwest: Mississippi, 1770-1860.* Baton Rouge, LA: Louisiana State University Press, 1988.

Moore, Vernon. *Cotton Ginners Handbook.* U.S. Department of Agriculture, Agricultural Research Service, Agricultural Handbook 503. Washington: GPO, 1977.

Shaw, Clifford, and Eckersely, Frank. *Cotton*. London: Sir Isaac Pitman & Sons Ltd, 1967.

Turner, Joseph Addison. *The Cotton Planter's Manual; Being A Compilation of Facts from the Best Authorities on the Culture of Cotton, Its Natural History, Chemical Analysis, Trade and Consumption, and Embracing a History of Cotton and the Cotton Gin*. NY: C.M. Saxton & Co, 1857.

Articles

Atkinson, Edward. "Cotton Manufactures in the United States." *Report of the Manufactures of the United States at the Tenth Census* (1880), (Washington, DC: GPO, 1883): 941-957.

Bennett, Charles A. and Gerdes, F.L. *Care and Maintenance off Cotton Gin Saws and Ribs.*. United States Department of Agriculture. Circular No. 393. Washington, DC: GPO, 1936.

Bennett, Charles A. and Gerdes, F.L. *Effects of Gin-Saw Speed and Seed-Roll Density on Quality of Cotton Lint and Operation of Gin Stands.* United States Department of Agriculture. Technical Bulletin No. 503. Washington, DC: GPO, 1936.

Bennett, Charles A. and Gerdes, F.L. *Ginning Cotton*. United States Department of Agriculture. Farmers' Bulletin No. 1748. Washington, DC: GPO, 1935.

Bennett, Charles A., et al. *Modernizing Cotton Gins*. United States Department of Agriculture.

Farmers' Bulletin No. 1802. Washington, DC: GPO, 1938.

Bennett, Charles A., et al. *Standard-Density Cotton-Gin Presses.* United States Department of Agriculture. Circular No. 733. Washington, DC: GPO, 1945.

Gerdes, Francis L. and Bennett, Charles A. Bennett. *Effect of Artificially Drying Seed Cotton Before Ginning on Certail Quality Elements of the Lint and Seed and on the Operation on the Gin Stand.* United States Department of Agriculture. Technical Bulletin No. 508. Washington, DC: GPO, 1936.

Gerdes, Francis L. and Johnson, Arvid. *Effect of Cleaning Seed Cotton on Lint Quality and Ginning Efficiency.* United States Department of Agriculture. Technical Bulletin No. 663. Washington, DC: GPO, 1939.

Gray, Lewis Cecil. *History of Southern Agriculture in the United States to 1860.* 2 Vols. Washington, DC: Carnegie Institution of Washington, 1939.

Hovland, Michael. "The Cotton Ginnings Report Program at the Bureau of the Census." *Agricultural History* 68,2(1994): 146-156.

Lowry, George A. "Ginning and Baling Cotton, from 1798 to 1898." *Transactions,* American Society of Mechanical Engineers XIX (June, 1898): 812-826.

Olliff, Martin T. "Life and Work in a Progressive Cotton Community: Prattville, Alabama, 1846-1860." *Agricultural History* 68,2(1994): 51-61.

Phillips, William H. "Making a Business of It: The Evolution of Southern Cotton Gin Patenting, 1831-1890." *Agricultural History* 68,2(1994): 80-91.

Soltow, James H. "Cotton as Religion, Politics, Law, Economics and Art." *Agricultural History* 68,2(1994): 6-19.

Taylor, Fred, et al. *Cotton Ginning Information for Farmers.* United States Department of Agriculture. Farmers' Bulletin No. 764. Washington, DC: GPO, 1916.

Thorpe, T.B. "Cotton and Its Cultivation." *Harper's New Monthly Magazine* VII (1854), pp. 452-9.

Whitten, David O. "Introduction." *Agricultural History* 68,2(1994): 1-5.